Cape Lookout

National Park Service
U.S. Department of the Interior

Cape Lookout National Seashore
North Carolina

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Cape Lookout Lighthouse

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DEPOSITORY ITEM

Graveyard of the Atlantic

Cape Lookout and its associated shoals have historically been as treacherous to passing ships as the more famous Diamond Shoals and Cape Hatteras area located 70 miles to the north. Compounding the danger of the shoals was the lack of any landmark that could be used for easy identification of the area. The land was so low that even in the best weather a ship might be on the shoals before the captain realized that they were dangerously close to land.

The First Lighthouse

Sketch of the first Cape Lookout lighthouse (National Archives)

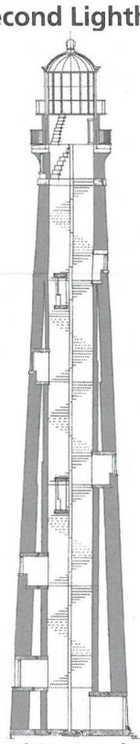
Built in 1812, the first lighthouse was only 107 feet in height. It was constructed as a wooden building with an interior brick stairwell and an iron lantern. Both the tower and the lantern were octagonal in shape. The wooden exterior of the tower was painted in red and white bands.

Inside the lantern, 13 oil lamps with parabolic reflectors produced a fixed white light that could be seen 16 to 18 miles out to sea.

However, mariners found that the tower was too short and the beacon unreliable. Lieutenant H.J. Hartstene, United States Navy, commanding the United States mail steamer *Illinois*, stated in 1851 that "... the lights on Hatteras, Lookout and Cape Florida, if not improved had be better dispensed with as the navigator is apt to run ashore looking for them."

Eventually replaced by a taller tower, the first lighthouse continued standing until after 1868.

The Second Lighthouse



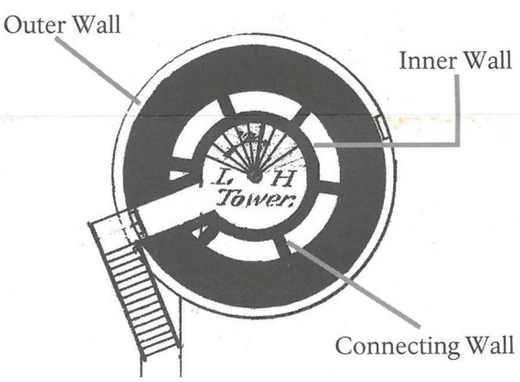
Architectural plan

Construction on the second lighthouse tower began in 1857. It would become operational on November 1, 1859. This tower style was the first of its kind built on the Outer Banks.

The completed tower stands 163 feet in height. Its walls taper from a total of 9 feet thick at the base to 1 foot 7 inches at the top.

When first completed, the tower was a solid, natural brick red color. From the lantern shown a fixed white light that could be seen 18 miles out to sea. To reach the lantern at the top, a circular cast iron staircase wound its way upward.

In order to build such a tall tower, a different construction technique was used. Although it looks solid, the lighthouse is built with double walls.



Cross section of the lighthouse tower

Building in this manner allowed the tower to be as tall as needed while not making it unstable or weakening the strength of the wall.

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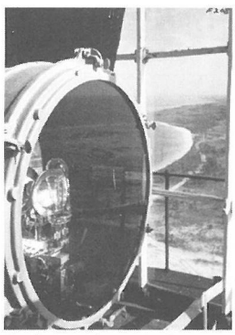
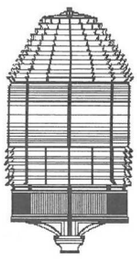
Lanterns, lenses, and lamps



Modern electric beacon



First order Fresnel lens

The old lighthouse had used a number of oil lamps to try and make its light bright. For the new lighthouse, a more efficient lighting system was installed inside the lantern. Consisting of a single oil burning lamp inside a large, glass Fresnel (pronounced Frey-nel) lens this system was a vast improvement.

The Fresnel lens

A Fresnel lens has the appearance of a huge glass beehive. These lenses come in seven sizes or "orders." A first order lens is the largest with a diameter of six feet. This size lens was used in coastal lighthouses such as Cape Lookout. In 1979, this lens was replaced by two modern electric beacons. These beacons use 1000 watt electric light bulbs.

Fuel

Originally oil was used to fuel the lamps. Over the years the type of oil changed from whale oil to mineral oil (kerosene).

Electrifying the light

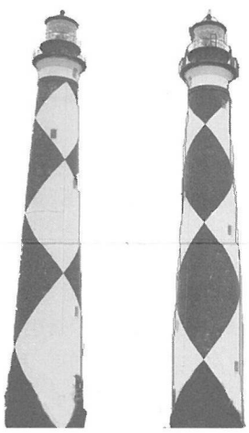
Eventually electricity became available for lighting. At first, gasoline powered generators were the only way to have electricity for the light. Today, an underwater cable running from Harkers Island supplies electricity to the lighthouse.

Light Characteristics

The heart of a lighthouse is the light that shines from the lantern at the top. This light can be either "fixed" (steady) or "flashing" (blinking). The color of the light can be white or red or green or a combination of these colors. These variations allow mariners to tell lighthouses apart at night.

The light at Cape Lookout was a "fixed white" from 1812 until 1914. At that time, a clockwork device was added to the Fresnel lens to make the light appear to "flash". Since that time the light has had various "flash" patterns. Currently the pattern is one "flash" every 15 seconds.

Daymarks



The painted pattern on a lighthouse is known as a "daymark." From the deck of a ship at sea, it can be very difficult to tell one lighthouse from another. Daymarks help to distinguish one lighthouse from another during daylight hours.

Originally, the new Cape Lookout tower was left a natural solid brick red. But by 1872, new light towers at Cape Hatteras and Bodie Island were built. Since these two lighthouses looked the same as the Cape Lookout tower from a distance, it was decided to paint each one with a different daymark. Cape Lookout was painted in 1873.

The daymark chosen for Cape Lookout was officially called a "diagonal checker" pattern. Today, most people refer to this pattern as a "diamond" pattern.

This pattern has some unusual properties. Look at the two lighthouses in the left margin. Do they look like the same lighthouse? They are both Cape Lookout Light. The daymark is aligned with the black diamonds North/South and the white diamonds East/West. This makes the tower appear to change color when seen from different directions. Cape Lookout is the only lighthouse in North Carolina to change like this, all others remain the same regardless of viewing direction.

The Lighthouse Today

Located within the boundaries of Cape Lookout National Seashore the Cape Lookout lighthouse is still an important and active aid to navigation. The United States Coast Guard - Group Fort Macon operates and maintains the light.

The lighthouse tower is open for climbing during the summer. Check with a ranger, at a Visitor Center, or on the park website (www.nps.gov/calo) for dates and reservation information.

The nearby historic Assistant Keepers' Quarters is open during the summer months as a museum. Also during the summer, National Park Service rangers and park volunteers offer programs on lighthouse history and life at a lighthouse from the porch of the keepers' quarters.

Through a special program, volunteers become modern Lighthouse Keepers and live on the second floor of the keepers' quarters during the period they serve.

Fast Facts

Year current lighthouse completed.....1859
Year painted with daymark pattern.....1873
Year automated 1950
Year transferred to the NPS 2003
Height above sea level.....169 ft.
Height above ground level.....163 ft.
Focal plane of the lantern above mean high water .....150 ft.
Wall thickness at the base .....9 ft.
Wall thickness at the top.....1 ft. 7 in.
Base diameter .....28 ft. 7 in.
Top diameter .....13 ft. 3 in.
Number of steps in staircase 207
Number of stair landings 7
Number of windows 10
Number of doors 2
A ship's hatch provides access to the gallery around the top of the lighthouse.
Light produced by two rotating beacons.
Each 1000 watt bulb produces 800,000 candlepower
Light color .....white
Distance light seen out to sea.....20 miles
Light flash pattern: 1 flash every 15 seconds